LG HRC POWER FUSES

- Introduction
- Rating and specification
- Conditions of selection
- Fuse holder dimensions
- Ordering information

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LG Industrial Systems

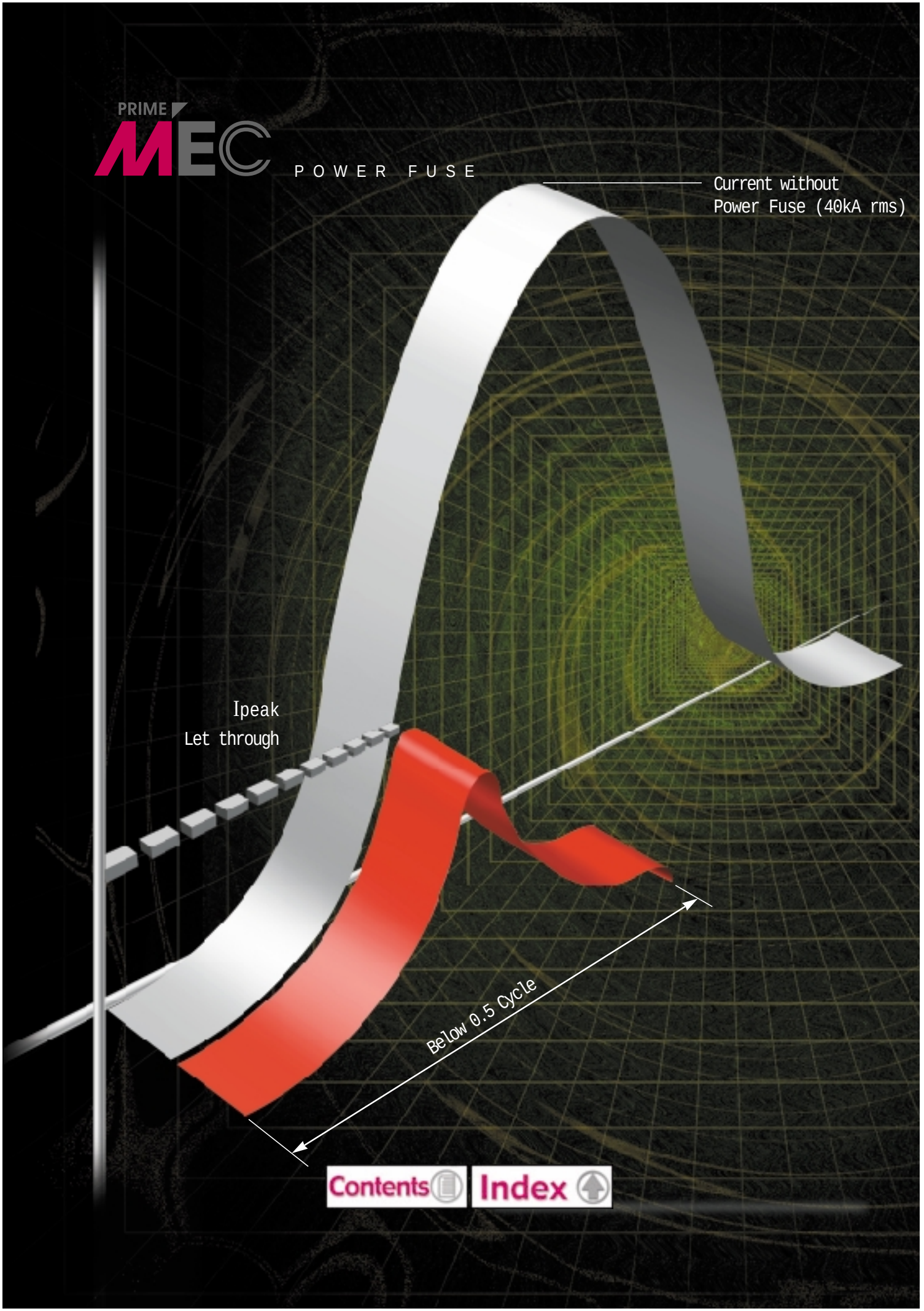
LG HRC POWER FUSES

ISO 9001, ISO 14001

LG HRC Power Fuses

PRIME MEC

POWER FUSE



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Rated Voltage (kV)	3.6			7.2			12			15.5			24			36		
Initiation of Arcing (degree)	56°	85°	90°	45°	70°	89°	48°	80°	82°	47°	72°	88°	47°	85°	85°	45°	85°	90°
Ipeak (kA)	6.5	7.2	7.3	5.2	6.0	7.3	5.2	7.1	7.1	5.3	6.1	7.3	5.1	7.2	7.2	5.2	7.2	7.3
Power Factor	0.07~0.15																	

- Test current : 40kA
- Basis : 63A
- I peak : Let through current (under the short circuit test)

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1. Introduction

Features

- The LG HRC Power Fuses belong to the PRIME MEC series. It interrupts high currents before the first loop of fault current has reached its natural peak value and therefore cuts down the required withstand capacity of the associated equipment on the electric system.
- Though small in size, it has a high breaking capacity and its enclosed type is suitable for use inside of the panel board.
- PRIME MEC fuses are equipped with striker pins for trip indicators as well as for operating the related load break switches.
- Link type fuse holder enables easy maintenance and high stability when replacing the fuses.
- With Fuse Checker, checking the conditions of a fuse in the panel board or by telecommunication is possible. (Optional)

Applied standards

- IEC 282-1, DIN 43625, BS 2692, KSC 4612

Applications

- Transformer protection.
  To protect against short circuit current in the secondary part of a transformer and fault current in the transformer circuit.
- Condenser protection.
  To protect against fault current in the condenser circuit.
- Motor protection.
  To protect against fault current in the motor circuit
- Cable protection.
  Fault current protection secures the cable.

2. Ratings and Specifications

FUSE LINK								FUSE HOLDER			
Type	Rated voltage (kV)	Rated current (A)	Breaking current (kA,rms)	Minimum breaking current (A)	Dimensions (A) (mm)	(B) (mm)	Weight (kg)	Type	Rated voltage (kV)	Rated current (A)	Insulation level (BIL, kV)
LFL-3G-5B	3.6	5	40	3~4In In:Rated Current	192	55	1.0	LFH-6G-D1HB	7.2	100	45
LFL-3G-10B		10									
LFL-3G-20B		20									
LFL-3G-30B		30									
LFL-3G-40B		40									
LFL-3G-50B		50									
LFL-3G-60B		63				77	2.0				
LFL-3G-75B		75									
LFL-3G-100B		100									
LFL-3G-125B		125			292		2.8	LFH-6G-D2HB		200	
LFL-3G-160B		160									
LFL-3G-200B		200									

FUSE LINK								FUSE HOLDER			
Type	Rated voltage (kV)	Rated current (A)	Breaking current (kA,rms)	Minimum breaking current (A)	Dimensions (mm) (A)	(B)	Weight (kg)	Type	Rated voltage (kV)	Rated current (A)	Insulation level (BIL, kV)
LFL-6G-5B	7.2	5	40	3~4In In:Rated Current	192	55	1.0	LFH-6G-D1HB	7.2	100	60
LFL-6G-10B		10									
LFL-6G-20B		20									
LFL-6G-30B		30									
LFL-6G-40B		40									
LFL-6G-50B		50				77	2.0				
LFL-6G-60B		63									
LFL-6G-75B		75									
LFL-6G-100B		100									
LFL-6G-125B		125			292		2.8	LFH-6G-D2HB		200	
LFL-6G-160B		160									
LFL-6G-200B		200									
LFL-12G-5B	12	5	50	3~6In	292	55	1.3	LFH-12G-D1HB	12	100	75
LFL-12G-10B		10									
LFL-12G-20B		20									
LFL-12G-30B		30									
LFL-12G-40B		40									
LFL-12G-50B		50									
LFL-12G-60B		63									
LFL-12G-75B		75				77	2.8				
LFL-12G-100B		100									
LFL-12G-125B		125			442		4.2	LFH-12G-D2HB		200	
LFL-12G-160B		160									
LFL-12G-200B		200									
LFL-15G-5B	15.5	5	40	3~4In	292	55	1.3	LFH-15G-D60B	15	63	110
LFL-15G-10B		10									
LFL-15G-20B		20									
LFL-15G-30B		30									
LFL-15G-40B		40				77	2.8				
LFL-15G-50B		50									
LFL-15G-60B		63									
LFL-15G-75B		75			442		4.2	LFH-15G-D1HB		100	
LFL-15G-100B		100									
LFL-20G-5B	24	5	40	3~4In	442	55	2.0	LFH-20G-D2HB	24	200	125
LFL-20G-10B		10									
LFL-20G-20B		20									
LFL-20G-30B		30									
LFL-20G-40B		40				77	4.2				
LFL-20G-50B		50									
LFL-20G-60B		63									
LFL-20G-75B		75			537	77	5.1	LFH-20G-D1HB		100	
LFL-20G-100B		100									
LFL-20G-40B		75			442	87	5.1	LFH-20G-D2HB		200	
LFL-20G-50B		100									
LFL-20G-60B		125									
LFL-20G-75B		160									
LFL-20G-100B		200									
LFL-20G-75C	36	5	25	3~4In	537	55	2.4	LFH-30G-D1HB	36	63	170
LFL-20G-100C		10									
LFL-20G-125B		20									
LFL-20G-		30									
		40				77	5.1				
		50									

- Application site : Indoor use.
- For fuse link & fuse holder type, refer to page 15.

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3. Conditions of selection

Basic conditions for selecting the Power Fuses

- The rated current of a Power Fuse should be higher than the sum of the total rated current of the electric equipment on the circuit.
- Back-up protection with electric equipment on the circuit.
  - -Set the operating characteristics of the Power Fuses to satisfy the over-current characteristics of the protected loads on the circuit. Also, set the occurred calories, by the I^2t operation, to be smaller than the short-circuit intensity of the electric equipment and circuit.
  - -Set the operating times of the Power Fuses to be faster than those of the protective equipment in the power source side and be later than those of the protective equipment in the load side.
  - -When using the Power Fuses for backup usage with other protective equipment, set the operating times of the protective equipment below the minimum breaking current to be faster than those of the Power Fuses.

For transformer protection

Phase	Circuit voltage (kV)	Transformer capacity (kVA)	Applied fuses	Circuit voltage (kV)	Transformer capacity (kVA)	Applied fuses	Circuit voltage (kV)	Transformer capacity (kVA)	Applied fuses	Circuit voltage (kV)	Transformer capacity (kVA)	Applied fuses
1ø	3.3	4~8	LFL-3G-5B	6.6	8~16	LFL-6G-5B	11	10~22	LFL-12G-5B	22.9	20~43	LFL-20G-5B
		6~13	LFL-3G-10B		13~25	LFL-6G-10B		22~45	LFL-12G-10B		43~90	LFL-20G-10B
		15~31	LFL-3G-20B		30~62	LFL-6G-20B		45~103	LFL-12G-20B		99~206	LFL-20G-20B
		21~42	LFL-3G-30B		40~84	LFL-6G-30B		75~155	LFL-12G-30B		149~310	LFL-20G-30B
		40~82	LFL-3G-40B		80~165	LFL-6G-40B		133~279	LFL-12G-40B		267~557	LFL-20G-40B
		49~102	LFL-3G-50B		98~204	LFL-6G-50B		173~359	LFL-12G-50B		345~719	LFL-20G-50B
		66~137	LFL-3G-60B		132~275	LFL-6G-60B		215~448	LFL-12G-60B		430~897	LFL-20G-60B
		68~165	LFL-3G-75B		134~330	LFL-6G-75B		290~572	LFL-12G-75B		580~1145	LFL-20G-75B,C
		128~220	LFL-3G-100B		256~440	LFL-6G-100B		462~763	LFL-12G-100B		923~1527	LFL-20G-100B,C
		151~275	LFL-3G-125B		302~550	LFL-6G-125B		682~954	LFL-12G-125B		1364~1908	LFL-20G-125B
		211~352	LFL-3G-160B		425~704	LFL-6G-160B		950~1221	LFL-12G-160B		2125~2443	LFL-20G-160B
		265~440	LFL-3G-200B		437~880	LFL-6G-200B		1300~1525	LFL-12G-200B		2650~3050	LFL-20G-200B
3ø	3.3	6.7~14	LFL-3G-5B	6.6	13~28	LFL-6G-5B	11	18~37	LFL-12G-5B	22.9	36~75	LFL-20G-5B
		11~22	LFL-6G-10B		21~44	LFL-6G-10B		37~78	LFL-12G-10B		75~157	LFL-20G-10B
		25~53	LFL-6G-20B		51~107	LFL-6G-20B		70~179	LFL-12G-20B		172~358	LFL-20G-20B
		35~73	LFL-6G-30B		70~145	LFL-6G-30B		129~269	LFL-12G-30B		258~538	LFL-20G-30B
		69~143	LFL-6G-40B		137~286	LFL-6G-40B		232~482	LFL-12G-40B		464~965	LFL-20G-40B
		85~177	LFL-6G-50B		170~354	LFL-6G-50B		299~623	LFL-12G-50B		598~1246	LFL-20G-50B
		114~238	LFL-6G-60B		229~476	LFL-6G-60B		372~777	LFL-12G-60B		745~1554	LFL-20G-60B
		117~285	LFL-6G-75B		233~571	LFL-6G-75B		500~991	LFL-12G-75B		1000~1983	LFL-20G-75B,C
		222~381	LFL-6G-100B		443~762	LFL-6G-100B		800~1322	LFL-12G-100B		1600~2645	LFL-20G-100B,C
		261~476	LFL-6G-125B		522~952	LFL-6G-125B		1181~1652	LFL-12G-125B		2362~3304	LFL-20G-125B
		365~610	LFL-6G-160B		735~1220	LFL-6G-160B		1840~2116	LFL-12G-160B		3680~4232	LFL-20G-160B
		459~762	LFL-6G-200B		755~1520	LFL-6G-200B		2296~2643	LFL-12G-200B		4593~5287	LFL-20G-200B

Selecting conditions

* When ordering 15.5, 36kV Power Fuse, Refer to page 9. 10. For further information contact the manufacturer.

1. The inrush current of a transformer is selected assuming that the current is 10 times that of the full-load transformer current in 0.1sec.
2. The rated current of the Power Fuses is selected to continuously flow at 1.5 times of the transformer rated current.
3. Power Fuses for proteting against short-circuit in the secondary part of a transformer are selected assuming that the current is 25 times that of the transformer rated current in 2 seconds.

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For condenser protection

Phase	Circuit voltage (kV)	Condenser capacity (kVA)	Applied fuses	Circuit voltage (kV)	Condenser capacity (kVA)	Applied fuses	Circuit voltage (kV)	Condenser capacity (kVA)	Applied fuses	Circuit voltage (kV)	Condenser capacity (kVA)	Applied fuses
3 ø	3.3	~9.8	LFL-3G-5B	6.6	~19	LFL-6G-5B	11	~22	LFL-12G-5B	22.9	~46	LFL-20G-5B
		9.8~12	LFL-3G-10B		19~24	LFL-6G-10B		22~39	LFL-12G-10B		46~83	LFL-20G-10B
		12~31	LFL-3G-20B		24~61	LFL-6G-20B		39~97	LFL-12G-20B		83~203	LFL-20G-20B
		31~46	LFL-3G-30B		61~92	LFL-6G-30B		97~152	LFL-12G-30B		203~317	LFL-20G-30B
		46~64	LFL-3G-40B		92~128	LFL-6G-40B		152~204	LFL-12G-40B		317~425	LFL-20G-40B
		64~81	LFL-3G-50B		128~163	LFL-6G-50B		204~270	LFL-12G-50B		425~564	LFL-20G-50B
		81~105	LFL-3G-60B		163~210	LFL-6G-60B		270~341	LFL-12G-60B		564~710	LFL-20G-60B
		105~150	LFL-3G-75B		210~300	LFL-6G-75B		341~490	LFL-12G-75B		710~1021	LFL-20G-75B,C
		150~222	LFL-3G-100B		300~445	LFL-6G-100B		490~795	LFL-12G-100B		1021~1655	LFL-20G-100B,C
		222~275	LFL-3G-125B		445~550	LFL-6G-125B		795~1138	LFL-12G-125B		1655~2370	LFL-20G-125B
		275~370	LFL-3G-160B		550~742	LFL-6G-160B		1138~1522	LFL-12G-160B		2370~3170	LFL-20G-160B
		370~500	LFL-3G-200B		742~1000	LFL-6G-200B		1522~1921	LFL-12G-200B		3170~4000	LFL-20G-200B

Selecting conditions

1. The inrush current of a condenser is selected to withstand 71 times of the condenser rated current in 0.002 sec.
2. The rated current of the Power Fuses is selected to continuously flow at 1.43 times of the condenser rated current.

For motor protection

Phase	Circuit voltage (kA)	Motor output (kVA)	Applied fuses	Circuit voltage (kA)	Motor output (kVA)	Applied fuses
3 ø	3.3	6.5~10.7	LFL-3G-5B	6.6	13~22	LFL-6G-5B
		10.7~28	LFL-3G-10B		22~36	LFL-6G-10B
		28~57	LFL-3G-20B		36~86	LFL-6G-20B
		50~85	LFL-3G-30B		86~117	LFL-6G-30B
		85~115	LFL-3G-40B		117~230	LFL-6G-40B
		115~142	LFL-3G-50B		230~284	LFL-6G-50B
		138~191	LFL-3G-60B		276~382	LFL-6G-60B
		181~252	LFL-3G-75B		362~503	LFL-6G-75B
		235~369	LFL-3G-100B		469~739	LFL-6G-100B
		293~435	LFL-3G-125B		586~870	LFL-6G-125B
		343~572	LFL-3G-160B		751~1223	LFL-6G-160B
		375~630	LFL-3G-200B		1154~1760	LFL-6G-200B

Selecting conditions

1. The starting current of a motor is selected to withstand 5 times of the full-loads current in 10 sec.

For cable protection

Cable diameter (mm^2)	Rated current of PF (A)
0.8	40
1.6	50
2	75
3.5	100
5.5	150
8	200
22	200

1. Under the short-circuit condition, the Power Fuse breaks the circuit in high speed. Therefore, with relatively high rated currents, the Power Fuse protects small size cables.
2. Selected to protect from above 10 times of the short-circuit current.

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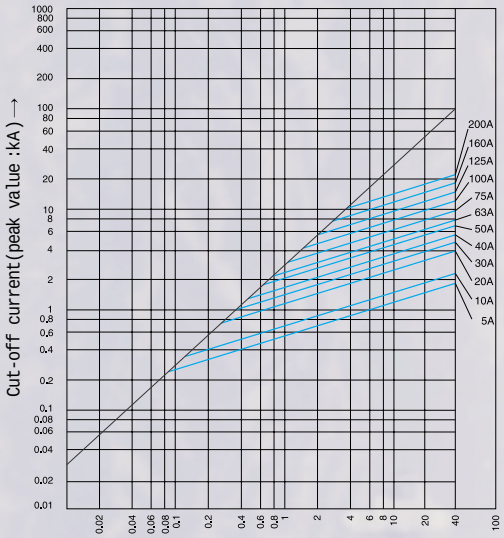
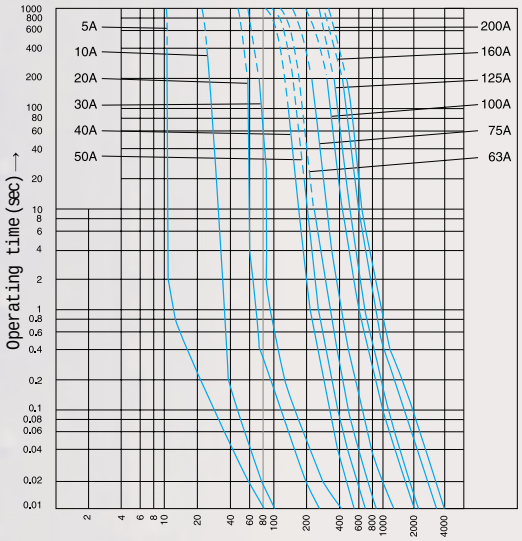
4. Characteristics curves

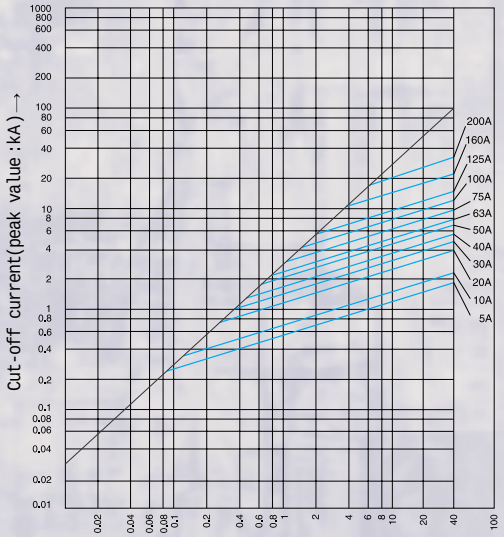
3.6kV Cut-off characteristics



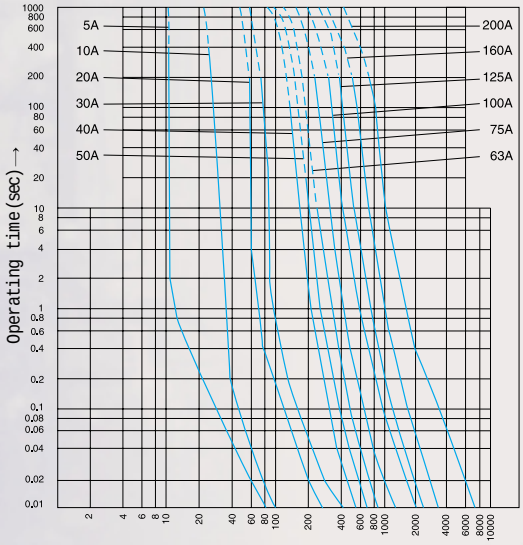
3.6kV Pre-arcing time-current characteristics



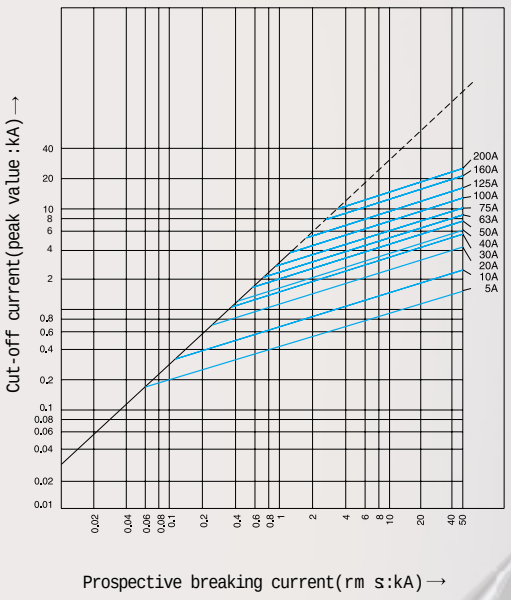
7.2kV Cut-off characteristics



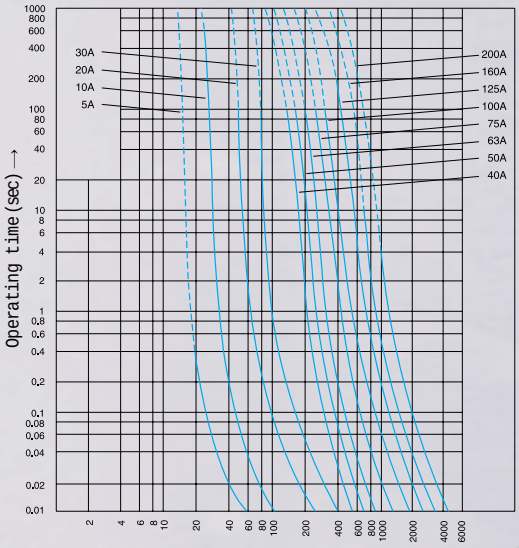
7.2kV Pre-arcing time-current characteristics



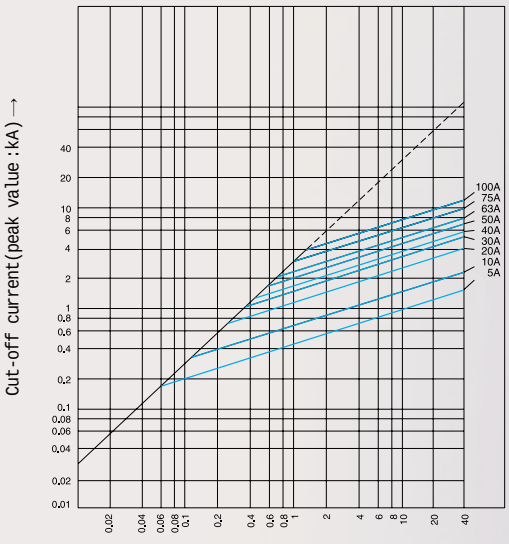
12kV Cut-off characteristics



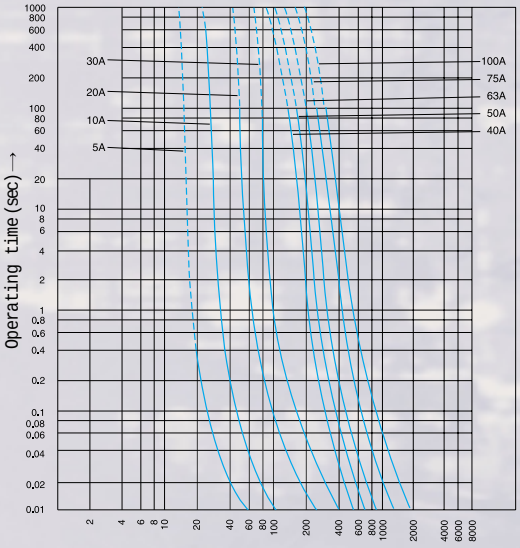
12kV Pre-arcing time-current characteristics



15.5kV Cut-off characteristics

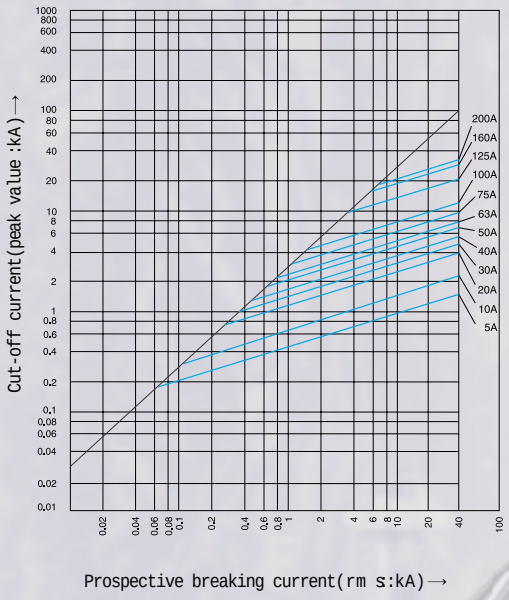


15.5kV Pre-arcing time-current characteristics

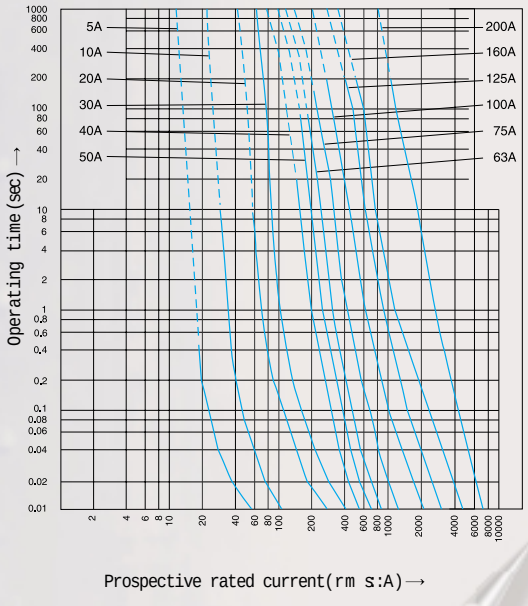


4. Characteristics curves

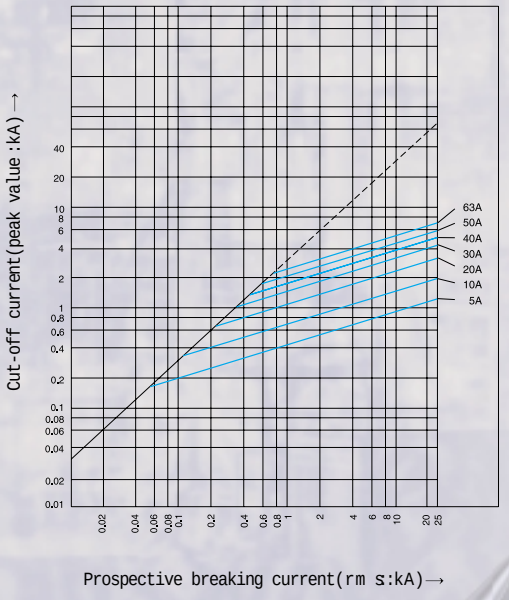
24kV Cut-off characteristics



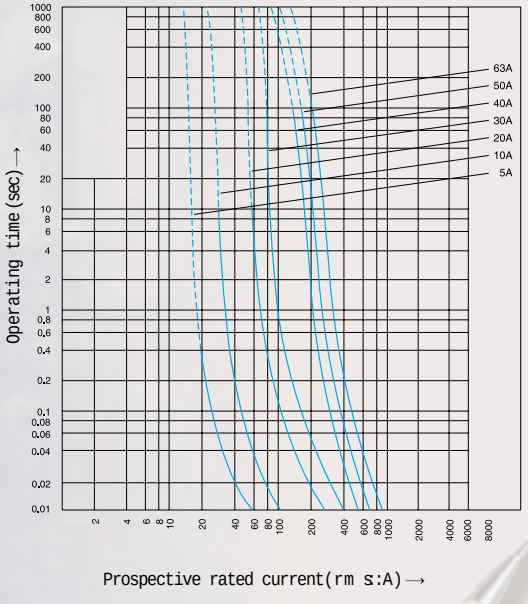
24kV Pre-arcing time-current characteristics



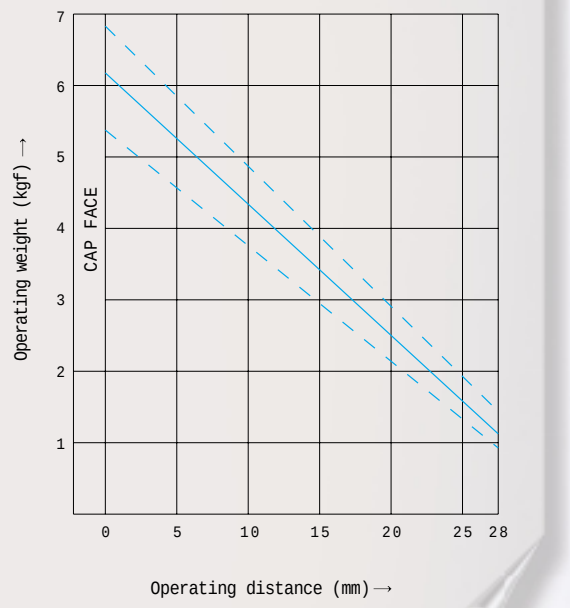
36kV Cut-off characteristics



36kV Pre-arcing time-current characteristics



Striker operating characteristic



Operating characteristics of the Power Fuses

● The characteristics of the Power Fuses are native and fixed. Therefore it can not be regulated like a circuit breaker or over-load relay. When ordering, please select the Power Fuses with proper current and operating

Breaking a small current

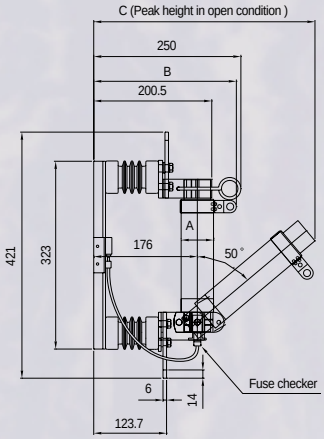
● Power Fuses are not adequate to protect small current. So, the manufacturer specifies and guarantees the minimum breaking current by regulation.

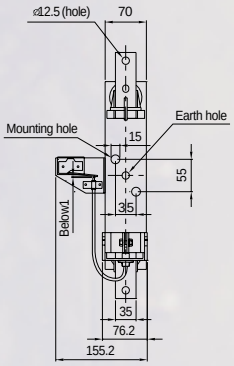
1) Select the rated current of the Power Fuse, which does not operate below the minimum breaking current.

2) Protect the current below the minimum value by use of other protective equipment.

5. Fuse holder dimensions

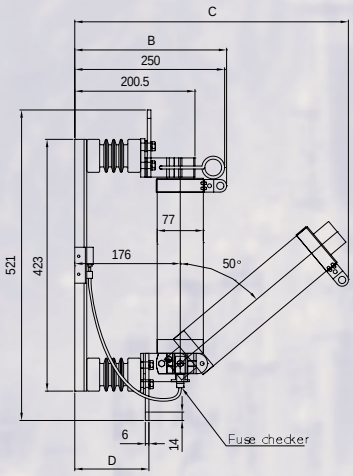
Indoor use Power Fuse Holder
LFH-6G-D1HB Type

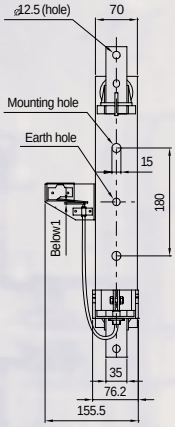




FUSE size (A)	B	C
ø55	242.3	376
ø77	253.3	380

Indoor use Power Fuse Holder
LFH-6G-D2HB/LFH-12G-D1HB/LFH-15G-D60B Type

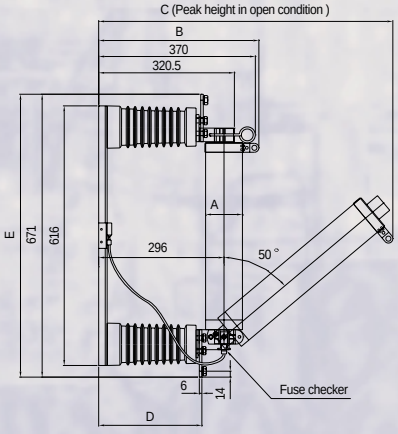


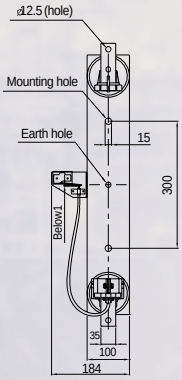


FUSE size (A)	B	C	D	Applie Holder
ø55	294.6	492.9	156	LFH-12G-D1HB
ø77	285.6	488.8	156	LFH-15G-D60B

FUSE size (A)	B	C	D	Applie Holder
ø77	253.3	456.5	123.7	LFH-6G-D2HB

Indoor use Power Fuse Holder
LFH-12G-D2HB/LFH-15G-D1HB/LFH-20G-D2HB/LFH-30G-D60B Type

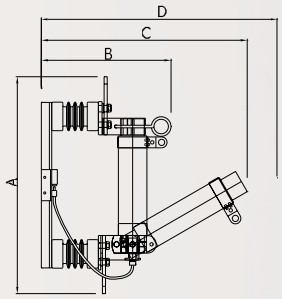


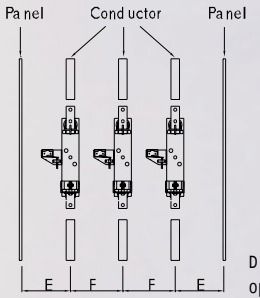


FUSE size (A)	B	C	D	E	Applied Holder
ø55	362.3	687.5	243.7	671	LFH-12G-D2HB
ø77	373.3	691.6	243.7	671	LFH-15G-D1HB
ø87	378.3	695	243.7	671	LFH-20G-D2HB

FUSE size (A)	B	C	D	E	Applied Holder
ø55	444.6	769.8	326	766	LFH-30G-D60B
ø77	455.6	773.9	326	766	

Power Fuse Holder





D :Minimum insulation space at openning

PF Holder type	Rated voltage (kV)	Rated current (A)	Circuit voltage (kV)	Insulation level (BIL , kV)	Dimensions (mm) A	B	C	D	E	F	Applied Fuses
LFH-6G-D1HB	7.2	100	3.3	45	421	250	376	477	97	130	LFL-3G-5B, 10B, 20B, 30B, 40B, 50B
			3.3	45	421	254	380	477	97	130	LFL-3G-60B, 75B, 100B
			6.6	60	421	250	376	503	123	158	LFL-6G-5B, 10B, 20B, 30B, 40B, 50B
			6.6	60	421	254	380	503	123	158	LFL-6G-60B, 75B, 100B
LFH-6G-D2HB	7.2	200	3.3	45	521	254	457	564	97	130	LFL-3G-125B, 160B, 200B
			6.6	60	521	254	457	590	123	158	LFL-6G-125B, 160B, 200B
LFH-20G-D2HB	24	200	22.9	125	671	363	688	734	-	260	LFL-20G-5B, 10B, 20B
			22.9	125	671	374	692	957	-	260	LFL-20G-30B, 40B, 50B, 60B
			22.9	125	671	379	695	957	-	260	LFL-20G-75C, 100C,125B, 160B, 200B

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6. Ordering information

Basic conditions for selecting the Power

Ratings

Operating Voltage (____V) Frequency (____Hz) Ampere (____A) Breaking Capacity (____kA)

Schematic diagram of the installation

- Initial symmetrical short-circuit current of the primary network
- Rated power / Impedance / Reactance / Voltage of generators / Transformers / Reactors
- Rated capacity of motors (over 1 MW)
- Rated capacity of capacitor bank and the inductance connected in series with them.

Applications

☐ Transformers

Set to allow continuous flow at 1.5 times of the rated current of a transformer and to break at 25 times of the rated current of a transformer within 2 seconds when a short circuit condition occurs in the secondary part.

☐ Condenser

Inrush current: set to allow flows at 71 times of the rated current of a condenser for 0.002 seconds

☐ Rated current: set to allow continuous flows at 1.43 times of the rated current of a condenser.

☐ Motor

☐ Cable

Upstream protection by circuit breakers or contactors

Operation & accessories

Installed site	☐ Indoor	☐ Outdoor
Fuse holder (base)	☐ Not needed	☐ Needed
Fuse checker	☐ Not needed	☐ Needed

Example of ordering

Rated voltage : 24kV, Hz : 60Hz, Rated current : 200A, Breaking capacity : 40kA

Application	☑ Upstream protection with circuit breaker	
installed site	☑ Indoor	☐ Out door
Fuse holder	☐ Not needed	☑ Needed
Fuse checker	☐ Not needed	☑ Needed

→ LFL-20G-200B / LFH-20G-D 2H B 1

*When ordering, please include this sheet

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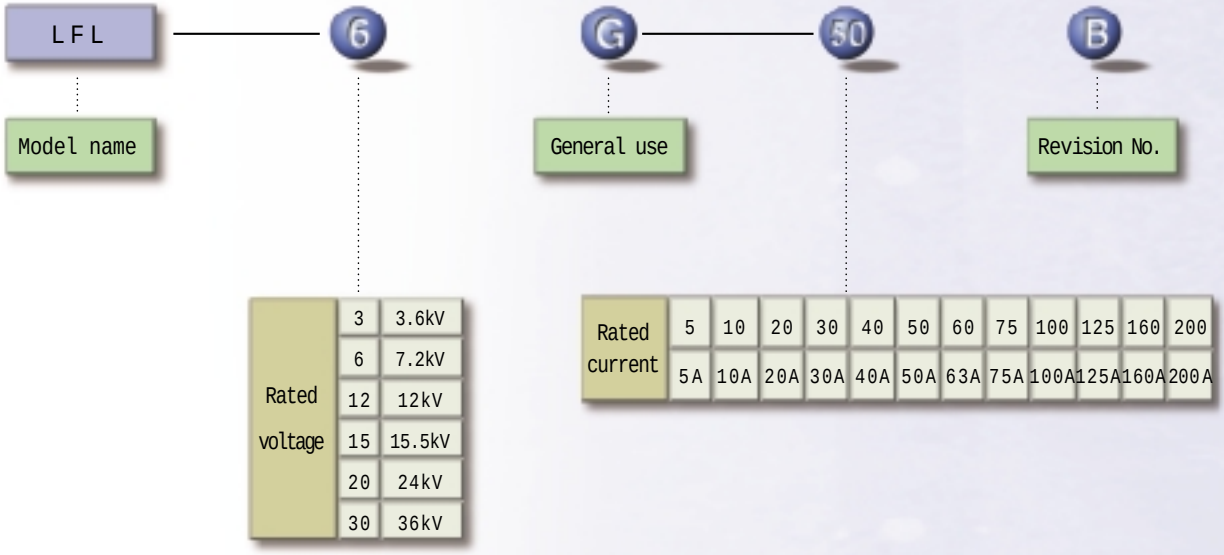
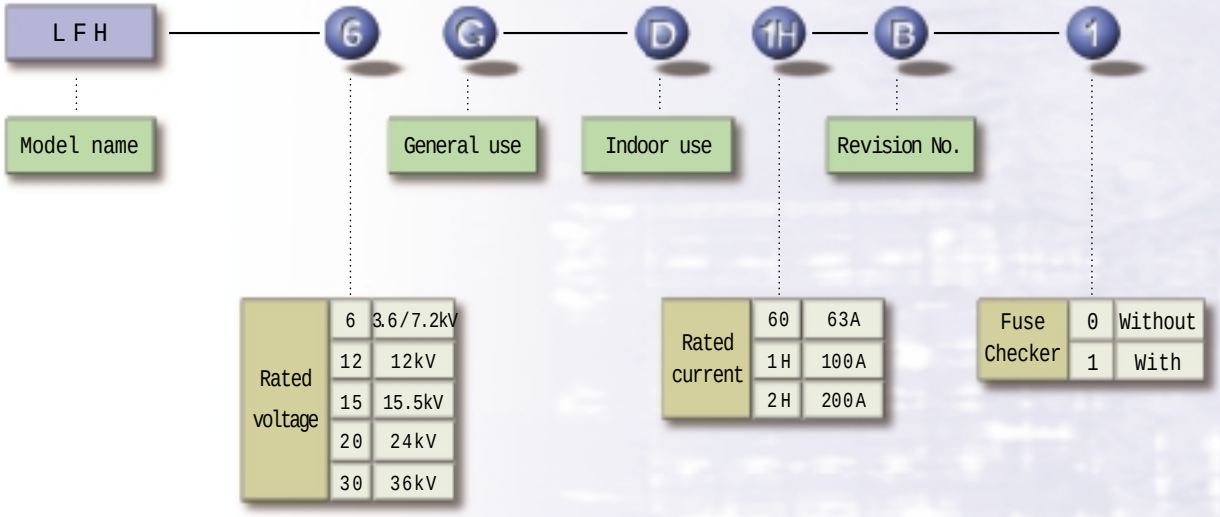
Types of P/F Link & P/F Holder

●P/F Link



●P/F Holder



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LG constantly endeavors to improve our products, so that information in this catalog is subject to change without notice.

LG Industrial Systems Co., Ltd.

■ **HEAD OFFICE**
LG Mullae Building 10, Mullae-dong, 6-ga, Youngdungpo-gu,
Seoul 150-096, Korea
Tel: (82)02-2006-3203~3215 Fax: (82)02-2006-3910

■ **E-mail address: sungokp@ lgis.lg.co.kr**

■ **http://www.lgis.lg.co.kr**

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